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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

December 10, 1999

Ms. Magalie Roman Salas, Secretary
Federal Communications Commission
The Portals, TW-A325
445 12th Street, S.W.
Washington, D.C. 20554

Re: Ex Parte Notification – WT Docket No. 99-168

Dear Ms. Salas:

On December 10, 1999, Wayne Leland, Corporate Vice President, Commercial, Governmental, Industrial Systems Solutions, Motorola, Rich Barth, Mary Brooner, Steve Sharkey and Jeanine Poltronieri, of Motorola, met with Ari Fitzgerald, Legal Advisor to Chairman William E. Kennard.

Motorola discussed the band plan Motorola has proposed in the above captioned proceeding, consistent with their comments filed in the proceeding. A copy of the presentation used during the meetings is included with this letter.

Please contact Jeanine Poltronieri at (202) 371-6896 regarding any questions concerning this matter.

Respectfully Submitted,

A handwritten signature in cursive script that reads 'Jeanine Poltronieri'.

Jeanine Poltronieri
Motorola, Inc.

cc:
Ari Fitzgerald

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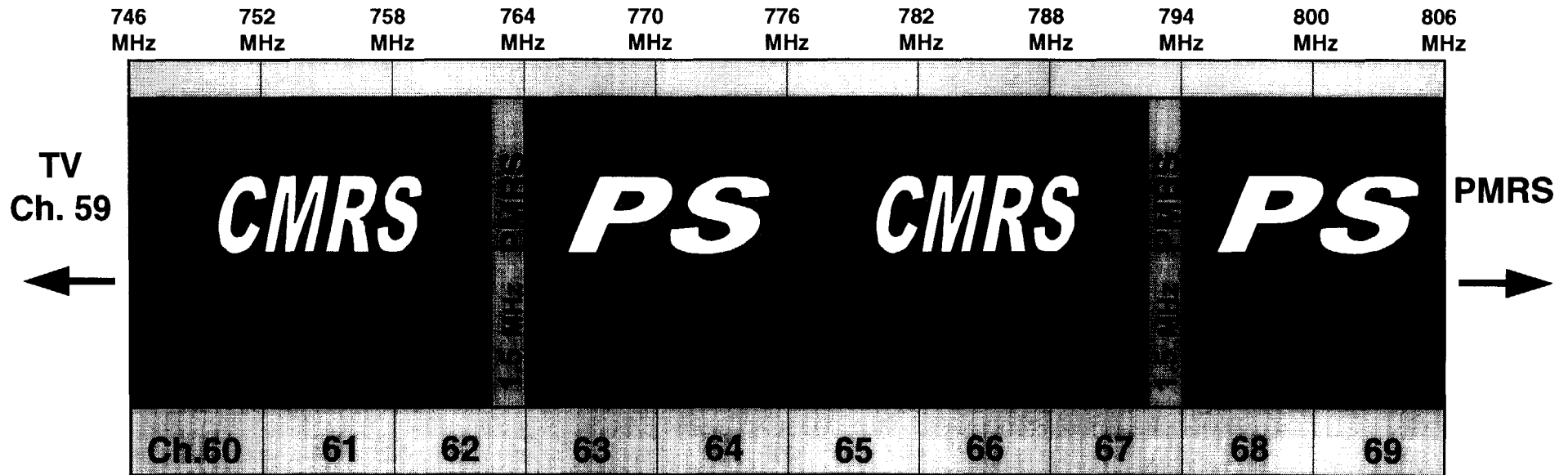
Why Can't I Hear?

700 MHz Public Safety
Interference Concerns

Interference Concern

- Dissimilar technologies and system designs in adjacent bands
 - ▲ Wideband systems will disrupt adjacent narrow band system communication
- Out-of-band emissions from transmitters on one side of band edge will interfere with receiver operations on the other side of band edge when in close proximity

Proposed 700 MHz Band Plan



Low Power
Base Transmitter

T



LMR
Portable/Mobile

Wideband Transmitter

Wide Area
Multiple sites
Interference limited
Economic Area Licensed
Dynamic Freq. Plan

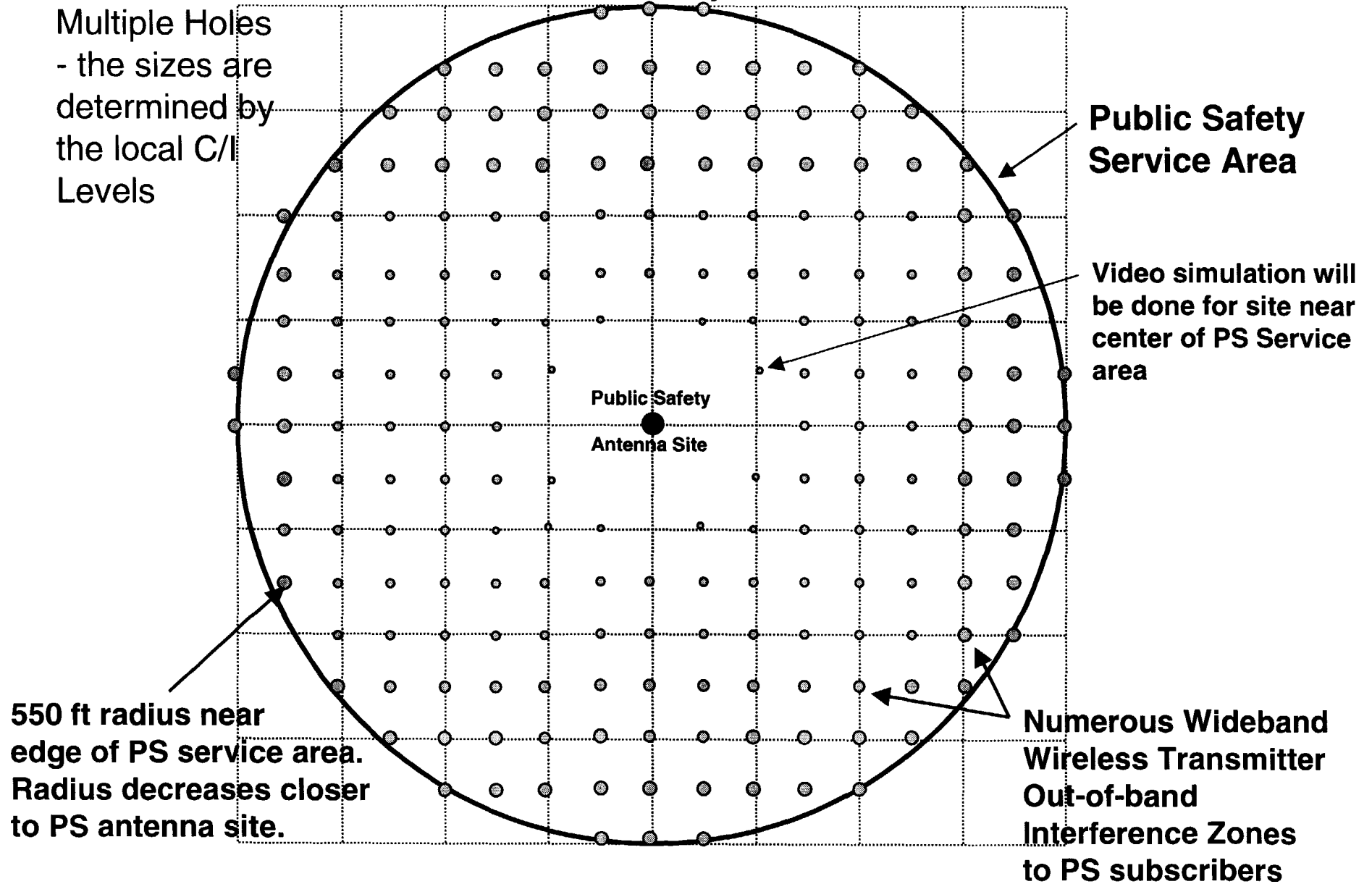
Private / Public Safety LMR

Limited Service Area
Single site
Noise Limited
Site Licensed/Coordinated
Stable Freq. Plan

Where Can't I Hear?

- There is an “Interference Zone” around every transmitter site
- Size of interference zone determined by:
 - ▲ Interferer transmitter power level
 - ▲ ***Interferer out-of-band suppression level***
 - and roll-off with increasing frequency separation
 - ▲ Interferer path loss/distance
 - ▲ Local obstructions
 - ▲ Desired signal path loss/distance
 - ▲ Desired receiver sensitivity and tolerance to interference (C/I level)

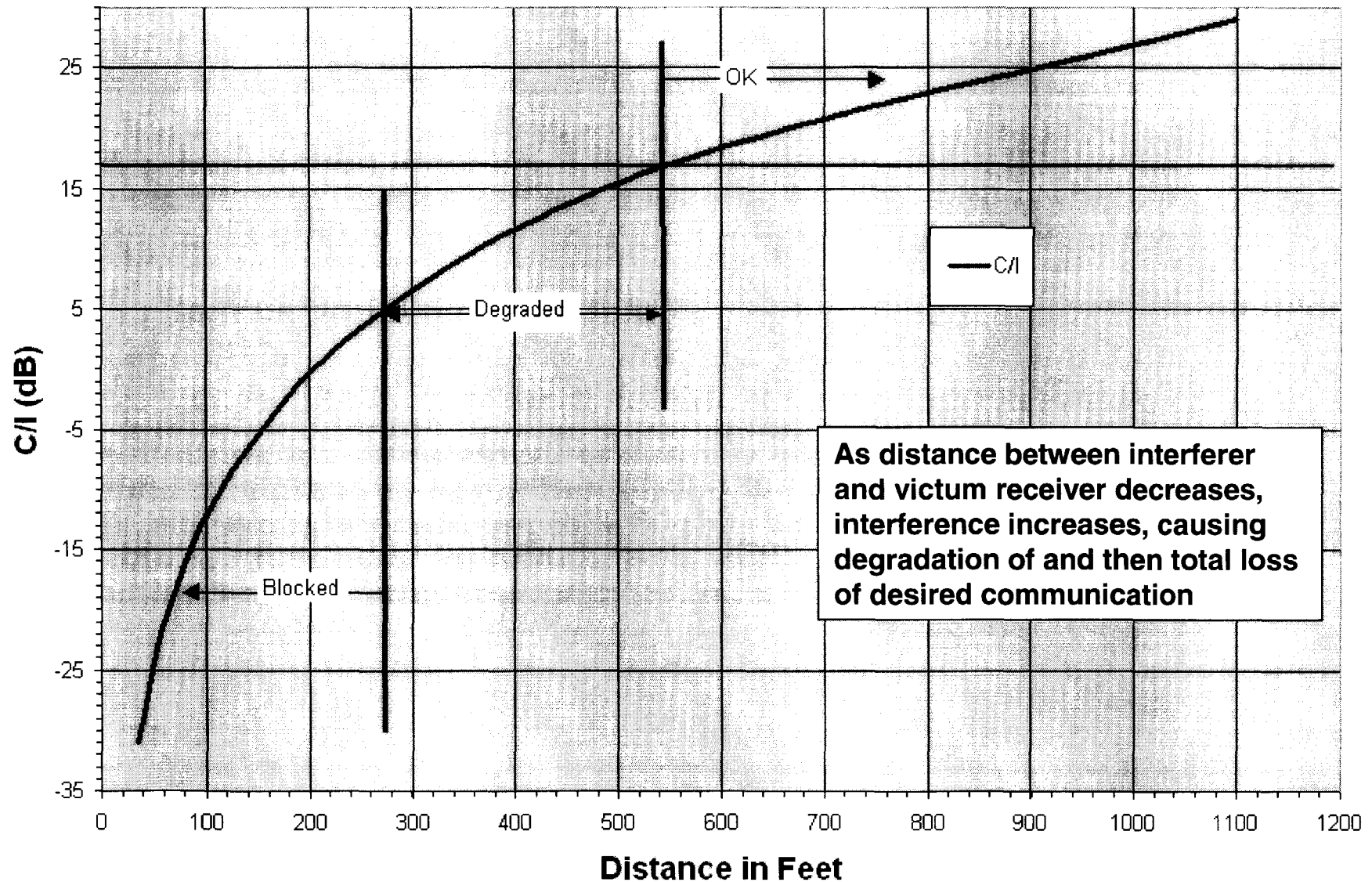
Comparison of number of Wideband Wireless Transmitter sites to Public Safety Service Area



Technical Details

- Greater than 17 dB C/I level is required for narrowband digital Public Safety communication
- Desired Signal @ -109 dBm Rayleigh Faded
 - ▲ Minimum Design Level for acceptable communications
- Interferer @ -126 dBm
 - ▲ +14 dBm / 6.25 kHz
 - ▲ 49 dB, Out of Band Noise suppression
 - ▲ 91 dB Loss @ 550 feet (40 log loss factor)
- Interference increases by 12 dB each time distance is cut in half !!!!
- At distances less than 550 feet, C/I < 17 dB, therefore degradation occurs

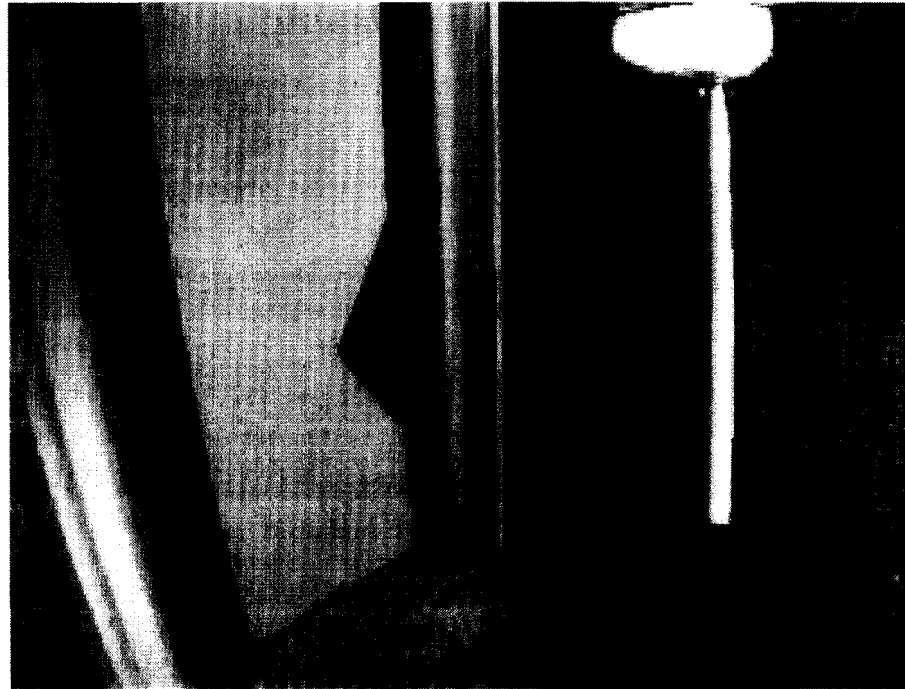
Carrier to Interference Ratio vs Distance from Interferer



Potential Scenario

- In the video on the next slide, the user gets closer to the ceiling mounted Wideband Wireless Transmitter, audio degradation increases until communication is disrupted
 - ▲ The out of band interference increases as the user approaches the Wideband Wireless Transmitter
 - ▲ The desired signal is strong enough that it would provide good performance if the interference was not present.

Interference Simulation Video



Single Left click on Picture to start the video

Public Safety User receiving dispatch information
and approaching a Wideband Wireless Transmitter
located in a building

What Happened ?

- In the video, as the user got closer to the ceiling mounted transmitter, audio degradation increased until communication was disrupted
 - ▲ The out of band interference increased as the user approached the transmitter
 - ▲ You could hear audio artifacts increase as the user approached the transmitter
 - ▲ Near the transmitter, the interfering signal was so strong that it totally blocked reception of the desired signal
 - to provide contrast, the interfering signal was toggled on/off so you could hear that the victim subscriber could still receive the desired signal

Summary

- Dissimilar system types should NOT be allowed in adjacent bands...or disruptive interference will occur TO the noise-limited system users
- Guard Bands are necessary between dissimilar technologies
- Guard Bands may be occupied if proper interference design considerations are used
- Interference criteria across band edges must be understood and adhered to.